



Fauna Technical Note No. 18

Threatened frogs



The Fauna Technical Note Series provides information for Forest Practices Officers on fauna management in production forests. These technical notes are advisory guidelines and should be read in conjunction with the requirements of the Forest Practices Code. The planner will use expert judgement and available information to determine the extent and nature of field survey work required to meet decision-making requirements.

The technical notes can be accessed on the Forest Practices Authority's website: www.fpa.tas.gov.au

1. Introduction

This technical note provides habitat descriptions for the two species of threatened frog found in Tasmania; the green and gold frog (*Litoria raniformis*) and the striped marsh frog (*Limnodynastes peroni*). The green and gold frog is listed as Vulnerable under both the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Tasmanian *Threatened Species Protection Act 1995*. The striped marsh frog is listed as Endangered under the Tasmanian *Threatened Species Protection Act 1995*.

The main threats to these frog species are loss and fragmentation of habitat, predation on eggs and tadpoles by introduced fish species, and infection by pathogens (particularly chytrid fungus) (FPA and DPIPWE 2011). Of these, the most significant threat to the survival of both frog species is related to the loss of breeding sites and/or peripheral sheltering sites and fragmentation of suitable aquatic and terrestrial habitat through conversion to other land uses (eg., conversion of suitable habitat to pasture) (FPA and DPIPWE 2011).

2. Green and gold frog (*Litoria raniformis*)

In Tasmania, the green and golden frog once occurred broadly across northern and eastern Tasmania. It has and is continuing to disappear from much of its former range, particularly in north-west, central and southern Tasmania (TSS 2007, as cited in FPA and DPIPWE 2011, Threatened Species Section 2014).

Green and gold frogs are active during the day and at night during the warmer months, and can be seen 'basking' out of water amongst vegetation or on rocks and logs. The breeding season in Tasmania is from September to January. The species requires adequate water levels for tadpole survival and prefers warmer water for breeding. Ideal breeding habitat is the shallow part of waterbodies (to approx 1.5 m deep) where there is generally a complex vegetation structure including emergent and submerged plants. However, they have also been found using farm dams frequented by stock that have polluted water and no aquatic vegetation (Threatened Species Section 2014).

In addition to the waterbodies used for breeding, habitat important for this species includes the land between waterbodies. Individuals can move 1–2 km between waterbodies and this movement between breeding sites is important for maintaining populations (DEWHA 2009). The frogs will move through corridors of native vegetation and pasture land, but are thought to have trouble travelling over roads and areas with little to no ground cover (DEWHA 2009).

Known localities, core and potential range descriptions and maps for the green and gold frog are provided through the Biodiversity Values Database (FPA and DPIPWE 2014).

3. Striped marsh frog (*Limnodynastes peroni*)

The striped marsh frog is primarily found along the north coast, and appears to be most abundant on King Island (Wilson 2010).

The breeding season in Tasmania is from August to December and they are most active at night. While habitat corridors connecting waterbodies are likely to improve habitat quality for striped marsh frogs, this species is not expected to travel as far and connecting corridors are not thought to be as important for this species as they are for the green and gold frog. Similarly, striped marsh frogs do not bask like green and gold frogs, and so the shading of the waterbody is not as important for this species as it is for green and gold frogs.

Known localities, core and potential range descriptions and maps for the striped marsh frog are provided through the Biodiversity Values Database (FPA and DPIWE 2014).

4. Assessing habitat

Potential habitat for the green and gold frog is permanent and temporary waterbodies, usually with vegetation in and/or around them. Potential habitat includes features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features (FPA and DPIWE 2014).

Potential habitat for the striped marsh frog is natural and artificial coastal and near-coastal wetlands, lagoons, marshes, swamps and ponds (including dams), with permanent freshwater and abundant marginal, emergent and submerged aquatic vegetation (FPA and DPIWE 2014).

While both of these frog species are found in a range of habitats (including degraded and polluted dams and ponds), some areas are more likely to be used frequently by these frogs than others.

Significant habitat for both species is high quality potential habitat that;

- (1) is known to be of high priority for the maintenance of breeding populations throughout the species' range and/or
- (2) conversion of which to non-native vegetation is considered to result in a long-term negative impact on breeding populations of the species. It may include areas that do not currently support breeding populations of the species but that need to be maintained to ensure the long-term future of the species.

The quality of potential habitat,

- increases if waterbody is still rather than flowing,
- increases if there is vegetation present in and/or around the waterbody, and
- increases with water quality.

The vegetation in and/or around the waterbody can include both native and exotic species. However, the habitat structure provided by some exotic plant species reduces the habitat quality for frogs. Blackberry, gorse and pasture should not be included when assessing vegetation in and around the waterbody. The presence of vegetation in the waterbody is more important for identifying significant frog habitat than the presence of vegetation around the waterbody. However, a waterbody can still be considered significant habitat if there is no suitable vegetation within the waterbody, but there is some surrounding it (hence the use of the term and/or when considering vegetation). One exception to this is when tall, exotic vegetation (e.g. plantation) occurs right to the edge of a small (<10m²) waterbody, such that it is likely to shade the water for most of the day; the shading in this instance can reduce the habitat quality of waterbody for green and gold frogs.

Figure 1 provides a flow diagram for identifying significant habitat for threatened frogs in Tasmania. Example pictures of potential and significant habitat are provided in Figure 2 and Figure 3.

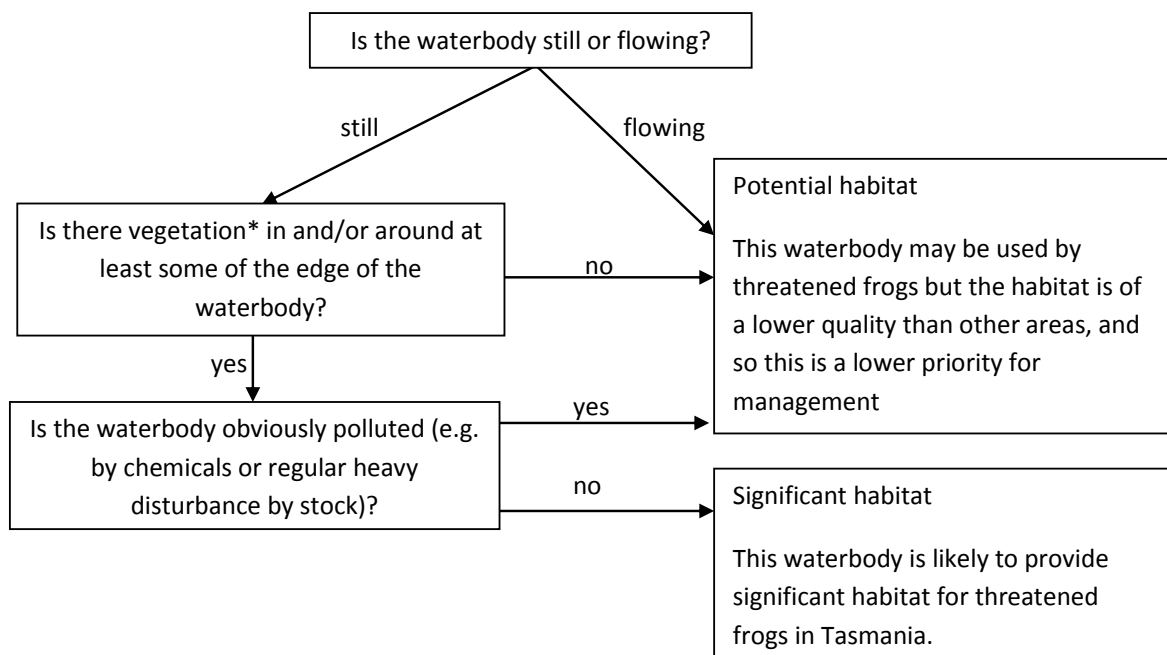


Figure 1. A flow diagram to identify potential habitat that is significant for threatened frogs in Tasmania.

* Blackberry, gorse and pasture should not be included when considering the vegetation in and/or around the waterbody.

Significant habitat for threatened frogs

Figure 2. Examples of significant habitat for threatened frogs. These areas are still, have some suitable vegetation in and/or around the pond and contain relatively clean water.

Other potential habitat for threatened frogs

Figure 3. Examples of other potential habitat for threatened frogs. These areas may provide habitat for threatened frogs, but are of lower quality than other areas due to one of the following reasons: flowing water, lack suitable vegetation in and around the waterbodies or are heavily degraded by stock.

5. Management

Management recommendations for these species are delivered via the Threatened Fauna Adviser 2014. While all areas of potential habitat (as identified using the information above) can be used by threatened frogs, management of significant habitat is the highest priority for the maintenance of the species. The management recommendations delivered by the Threatened Fauna Adviser are designed to minimise risks to populations of the species associated with forestry operations. A summary of the risks and the management approach is provided below.

Reduction in water quality and loss of basking sites

Maintenance of water quality is important for this aquatic species. While both green and gold and striped marsh frogs are found in a range of habitats, including polluted waterbodies, they are more likely to be found in cleaner water. Furthermore, frogs are known to be sensitive to herbicides and insecticides, so only chemicals registered for use near waterways should be used.

Excluding machinery and maintaining native vegetation around the edge of a waterbody will help maintain the stability of the banks and can help maintain water quality.

The width of buffers is particularly important for green and gold frogs. Because green and gold frogs bask, the buffers are designed to be wide enough that the regrowing trees should not shade all the waterbody. Application of these buffers is more important on the northern side of the waterbody than the southern side.

Introduction of disease

Chytrid fungus is a potentially lethal frog disease that is spread by the transport of infected mud, water, plants, frog and tadpoles. The risk of chytrid fungus to green and gold frogs and striped marsh frogs is assessed as 'medium' (DPIPWE 2010). Chytrid fungus can spread widely and quickly and once established it is extremely difficult to eradicate. The Threatened Fauna Adviser provides management recommendations to minimise the risk of spreading chytrid fungus.

Fragmenting habitat

Habitat corridors connecting waterbodies are important for maintaining population dynamics for the green and gold frog. Habitat connectivity could be provided by a linear water body (for example creekline) or by suitable terrestrial habitat between waterbodies. Individuals may use a range of terrestrial and aquatic habitats as movement corridors between water bodies, including forests, floodways or grassy fields. However changes to habitat (such as clearing) may reduce species ability to disperse. The national significant impact guidelines for the green and gold frog recommend maintaining dedicated terrestrial habitat corridors 100m wide between areas known or likely to support the species (DEWHA 2009). While corridors are likely to improve habitat quality for striped marsh frogs, this species is not expected to travel as far and connecting corridors are not thought to be as critical for this species.

6. When is a notification needed?

FPOs need to notify the FPA Biodiversity Program for management advice when **any** of the following apply -

- A) For any operation with significant habitat within the core range.
- B) If green and gold frogs or striped marsh frogs are detected within or adjacent to the planning unit.
- C) For all operations where the management recommendations cannot be applied.

Details to supply to FPA Biodiversity Program if advice is required

In addition to standard details that are required as part of the biodiversity evaluation, the following details should be supplied:

1. Any known green and gold frog or striped marsh frog records within 5 km of the planned operation.
 - Show location of records from Biodiversity Values Database (or NVA)
 - Note any new observations
2. A map (based on existing mapping layers or on-ground survey) showing the distribution of drainage features within 2 km of the proposed planning unit, including rivers, lakes, streams, farm dams, irrigation channels, swamps and wetlands and a 'mud map' of land use and tenure.
3. Operational areas
 - A map showing the proposed extent of operations, especially relative to potential habitat features within and adjacent to the proposed operation.
 - A map showing how potential habitat can be managed.

References

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- TSS. 2007. Draft fauna recover plan: Threatened Tasmanian frogs 2007-2011. Department of Primary Industries and Water, Hobart.
- Wilson, D. 2010. Environmental modelling of historic and current distribution for Tasmania's two threatened and three endemic frog species. Department of Primary Industries, Parks, Water and Environment, Hobart.

7. Publication details

This technical note has been prepared by Amy Koch (FPA). It should be cited as:

Forest Practices Authority 2014, 'Threatened frogs, *Fauna Technical Note No. 18*, Forest Practices Authority, Hobart, Tasmania.

8. Contact details

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Version Control

Version	Date	Author(s)	Summary of changes
0.1	August 2013	Amy Koch	Draft tech note
0.2	March 2013	Amy Koch	Feedback sought from DPIPW. Feedback received from Matt Webb, Annie Philips in 2014 and 2015 (see FPA/07/307/018: Fauna Technical Note - Threatened Frogs). Flow diagram for potential and significant habitat added.
0.3	March 2016	Amy Koch	Endorsed by DPIPW TFA PSC, March 2016 Note: BVD habitat description and core range boundary for the striped marsh frog will need to be updated to match description in Technical Note. Comments sought from Marie Yee, FT.
0.4	July 2016	Sarah Munks	Addressed edits from Marie Yee, FT (RM D16/120896)
1.0	August 2016	Sarah Munks	Final version approved by FPA Board
1.1	July 2017	Dydee Mann	Removed reference to core range within significant habitat description. The core range boundary is the management tool used to prioritise the habitat within TFA pathways, so reference to the range is unnecessary and confusing within this document.

Category of advice (A1, A2, B1, B2, B3 or C):		B2
Stages	Required/not required	Completed (date)
Specialist	Required	March 2013
Line Manager	Required	Dec 2014
Peer/FPO/stakeholder review	Required	March 2016/
CFPO	Required	June 2016
FPAC	Required	FPAC advice not required by Board
Board	Required	July 2016